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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/583,098 | 06/16/2006 | Ralf Boehnke | 287953US8X PCT | 1264 |

22850 7590 10/14/2010

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| EXAMINER | |
|---|---|
| ROBERTS, BRIAN S | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2466 | |

| NOTIFICATION DATE | DELIVERY MODE |
|---|---|
| 10/14/2010 | ELECTRONIC |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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| Office Action Summary | Application No. 10/583,098 | Applicant(s) BOEHNKE ET AL. | |
|---|---|---|---|
| | Examiner BRIAN ROBERTS | Art Unit 2466 | |

***-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --***

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *07 August 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *27-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *27-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

- Claims 27-42 remain pending.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 27-32, 40, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carrender et al. (US 2005/0156039) in view of Tiernay et al. (US 2001/0050922) in view of Reis et al. (US 5640151), and further in view of MacLellan et al. (US 6177861).

- In reference to claim 27

In Figure 1, Carrender et al. teaches an heterogeneous wireless data transmission network that includes

- a first master node (*e.g. reader 101; par. 0018-0019*)
- a passive slave node (*e.g. class II passive backscatter tag; par. 0029*) including a first passive receiver (*e.g. receiver/demodulator 205; par. 0020*) and a first passive transmitter (*e.g. transmitter/modulator 209; par. 0020*) configured to modulate and reflect external RF signals, said passive slave node being configured to transmit data to the master node by modulated backscatter communication using the first passive transmitter (*par. 0020*);

- an active slave node (*e.g. class IV semi-passive/active transmitter tag; par. 0031*) being configured to transmit data to the passive slave node (*class IV can wirelessly communicate/work with other devices; par. 0031 including tags of different classes e.g. class II tags; par. 0031*)

Carrender et al. does not teach that the active slave node includes a second passive transmitter and receiver configured to modulate and reflect external RF signals and a first active transmitter configured to transmit a modulated signal independently, and configured transmit the data to the passive slave node using the first active transmitter.

In Figure 1, Tiernay et al. teaches an active slave node (*i.e. transponder 100; par. 0031*) includes a passive transmitter (*i.e. modulated backscatter transmitter and receiver; par. 0050*) configured to modulate and reflect external RF signals and a first active transmitter (*i.e. active transmitter; par. 0050*) configured to transmit a modulated signal independently, and configured to transmit data (*e.g. transponder ID; par. 0048*) using the active transmitter (*par. 0050-0051*).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system of Carrender et al. to include the active slave node including a second passive transmitter configured to modulate and reflect external RF signals, a second passive receiver and a first active transmitter configured to transmit a modulated signal independently, and configured to transmit the data passive slave node using the first active transmitter as suggested by Tiernay et al. because it allows the active slave node to wirelessly communicate data (e.g. sensor data) with a master node

using modulated backscatter transmissions in order to conserve power at the active slave node as well as communicate data (e.g. sensor data) with a passive slave node that requires active transmissions.

The combination of Carrender et al. and Tiernay et al. does not teach that the first master node is configured to wake up the passive slave node or active slave node from a sleep state at any time by transmitting a wake-up signal to the passive slave node or active slave node; the first passive receiver is configured to receive the wake-up signal; or the first passive transmitter is configured to transmit data after the passive slave node is woken up from the sleep state.

Reis et al. teaches a master node (*e.g. interrogator 7; Figure 1, col. 9 line 4-8*) configured to wake up slave nodes (*e.g. tags 8; Figure 1, col. 9 line 4-8*) from a sleep state (*i.e. low power state; 11 line 65-68*) at any time by transmitting a wake-up signal to the slave nodes (*col. 13 line 40-50*); a receiver (*e.g. receiver 1; Figure 3, col. 11 lines 50-56*) of a slave node (*e.g. tag 8; col. 11 lines 50-56*) configured to receive the wake-up signal (*col. 14 lines 38-44*); and a first transmitter (*e.g. transmitter 3; Figure 3, col. 11 lines 50-56*) of the slave node configured to transmit data after the slave node is woken up from the sleep state (*i.e. tag 8 configured to transmit data to interrogator during batch collection period after a wake-up period; col. 13 line 50 - col. 14 line 4*).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Carrender et al. and Tiernay et al. to include the first master node being configured to wake up the passive slave node and active slave node from a sleep state at any time by transmitting a wake-up signal to the

passive slave node and active slave node; the first passive receiver being configured to receive the wake-up signal; and the first passive transmitter being configured to transmit data after the passive slave node is woken up from the sleep state as suggested by Reis et al. because it allows the passive slave node and active slave node to conserve power via entering a sleep mode when not communicating with the first master node and allows the first master node to wake-up the passive slave node and active slave node for two-way communication between the master node and the passive slave node and active slave node.

The combination of Carrender et al., Tiernay et al., and Reis do not teach a second master node the second master node is configured to provide an electromagnetic field to allow MBS, and the first master node is configured to receive the data from the first passive transmitter when the second master node provides the electromagnetic field.

MacLellan et al. teaches a first and a second master node (*i.e. Interrogators 103; see Figure 1, col. 2 lines 54-64*). The second master node is configured to provide an electromagnetic field to allow MBS (*i.e. Interrogator provides a signal which a Tag utilized for MBS; col. 2 lines 65 - col. 3 line 13, col. 3 lines 37-40*), and the first master node is configured to receive data from a Tag when the second master node provides the electromagnetic field (*Interrogators 103 overlap in coverage and more than one Interrogator may receive successfully receive an uplink message from a specific Tag; see col.6 lines 11-23*) .

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Carrender et al., Tiernay et al., and Reis to include a second master node the second master node being configured to provide an electromagnetic field to allow MBS, and the first master node being configured to receive the data from the first passive transmitter when the second master node provides the electromagnetic field as suggested by MacLellan et al. because it would expand the radio coverage of a network to ensure that successful communications with each of the slave nodes in the network takes place.

- In reference to claim 28

The combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. teaches a system that covers substantially all limitations of the parent claim. Carrender et al. suggest that the active slave node can communicate with another active slave (*i.e. class IV tags can wirelessly communicate with each other; par. 0031*) and the passive slave node (*i.e. class IV semi-passive/active transmitter tag that can wirelessly communicate/work with other devices; par. 0031 including tags of different classes e.g. class II tags; par. 0031*).

The combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. does not teach that the active slave node is configured to wake up the passive slave node or another active slave node from a sleep state at any time by transmitting a wake-up signal to the passive slave node or the another active slave node.

Reis et al. teaches a node (*e.g. interrogator 7; Figure 1, col. 9 line 4-8*) configured to wake up other nodes (*e.g. tags 8; Figure 1, col. 9 line 4-8*) from a sleep state (*i.e. low power state; 11 line 65-68*) at any time by transmitting a wake-up signal to the other nodes (*col. 13 line 40-50*).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. to include the active slave node being configured to wake up the passive slave node and another active slave node from a sleep state at any time by transmitting a wake-up signal to the passive slave node and the another active slave node as suggested by Reis et al. because it allows the passive slave node and the another active slave node to conserve power via entering a sleep mode when not communicating with the active slave node and allows the active slave node to wake-up the passive slave node and the another active slave node for two-way communication between the active slave node and the passive slave node and the another active slave node.

- In reference to claim 29

The combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. teaches a system that covers substantially all limitations of the parent claim.

The combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. does not teach that at least one of the first or second master nodes further comprises

a second active transmitter configured to transmit data to the first active transmitter of the active slave node.

Reis et al. teaches a master node (*e.g. interrogator 7; Figure 1, col. 9 line 4-8*) comprising a first and second active transmitters (*e.g. RF transmitter/rece3iver modules 123-1, 123-M; col. 9 lines 35-40*) configured to transmit data to a transmitter (*e.g. RF module 23; col. 51-56*) of a slave node (*e.g. tags 8; Figure 1, col. 9 line 4-8*).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. to include at least one of the first or second master nodes further comprising a second active transmitter configured to transmit data to the first active transmitter of the active slave node as suggested by Reis et al. because it provides diversity in the transmissions to the active slave node so as to increase the reliability and robustness of the network.

- In reference to claim 30

The combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. teaches a system that covers substantially all limitations of the parent claim. Carrender et al. further teaches that the passive slave node further comprises a processing unit (*e.g. controller 207; par. 0020*) configured to process and create dynamic data (*e.g. sensor data; 0029*) for transmission by the first passive transmitter (*i.e. transmission of data during reply phase; par. 0025*).

- In reference to claim 31

The combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. teaches a system that covers substantially all limitations of the parent claim. Carrender et al. further teaches that the passive slave node includes a power supply (*i.e. battery; par. 0029*)

- In reference to claim 32

The combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. teaches a system that covers substantially all limitations of the parent claim. Carrender et al. further teaches that the active slave node further includes a sensor element (*e.g. sensors; par. 0027*) configured to detect operational parameters of the active slave node or environmental data.

- In reference to claim 40

The combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. teaches a system that covers substantially all limitations of the parent claim. In Figure 1, Carrender et al. further teaches that the network is configured in a hybrid star or meshed topology. (*par. 0018-0019*)

- In reference to claim 42

The combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. teaches a system that covers substantially all limitations of the parent claim. As

recited in the rejection of parent claim 27, the combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. the active slave node comprises a second passive receive. In Figure 1, Carrender et al. further teaches the active slave node comprises a second passive receiver, and at least one of the first and second master nodes includes an active receiver (*i.e. receiver 119; par. 0019*) that inherently has a power higher consumption and sensitivity than the first passive receiver in the passive slave node or a second passive receiver in the active slave node (*active receiver of reader 101 have higher power consumption and sensitivity than passive receivers of Class II passive backscatter tag; par. 0019, 0029*), and the first passive receiver in the passive slave node or the second passive receiver in the active slave node inherently has a lower power consumption and sensitivity than the active receiver in the at least one of the first and second master nodes (*passive receivers of Class II passive backscatter tag have lower power consumption and sensitivity than active receiver of reader 101; par. 0019, 0029*).

2. Claims 33-39 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carrender et al. (US 2005/0156039) in view of Tiernay et al. (US 2001/0050922) in view of Reis et al. (US 5640151) and in view of MacLellan et al. (US 6177861), as applied to the parent claim, and further Herrmann et al. (US 2003/0151513).

- In reference to claim 33

The combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. teaches a system that covers substantially all limitations of the parent claim.

The combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. does not teach that that the passive slave node or active slave node further includes a remotely controllable actuator element configured to execute programmable actions.

Herrmann et al. teaches a slave node (*e.g. class 1 sensor/actuator node; Figure 2*) includes a remotely controllable actuator element (*e.g. valve actuators; par. 0007*) configured to execute programmable actions (*par. 0016-0019*).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system of the combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. to include the passive slave node or active slave node further including a remotely controllable actuator element configured to execute programmable actions as suggested by Herrmann et al. because it would allow the passive slave node or active slave node to support an actuator to perform a required actuation in the network.

- In reference to claim 34

The combination of Carrender et al., Tiernay et al., Reis et al., MacLellan et al., and Herrmann et al. teaches a system that covers substantially all limitations of the parent claim. Carrender et al. further teaches that a passive slave node is configured to transmit data to the master node by modulating and reflecting an external signal transmitted from a second master node (*par. 0025*).

The combination of Carrender et al., Tiernay et al., Reis et al., MacLellan et al., and Herrmann et al. does not teach wherein the passive slave node or the active slave

node is configured to transmit data to at least one of the first or second master nodes by modulating and reflecting an external signal transmitted from the second master node.

In Figure 8, Reis et al. teaches a second master node (*e.g. interrogator 7-C; col. 22 lines 47-51*), wherein a slave node (*e.g. Tag 8-9*) is configured to transmit data (*e.g. signals; col. 23 lines 1-3*) to a master node (*e.g. interrogator 7-1; col. 22 lines 47-51*) in response to an external signal (*e.g. Hello; col. 15 line 54-60*) transmitted from a second master node (*e.g. interrogator 7-C; col. 22 lines 47-51).*

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system of the combination of Carrender et al., Tiernay et al., Reis et al., MacLellan et al., and Herrmann et al. to include the passive slave node is configured to transmit data to at least one of the first or second master nodes by modulating and reflecting an external signal transmitted from the second master node as suggested by Reis et al. because it allows the passive slave node to communicate with the master node via an external signal transmitted from a second master node so that each master node can determine a signal strength associated with the passive slave node in order to determine a location of the passive slave node.

- In reference to claim 35

The combination of Carrender et al., Tiernay et al., Reis et al., MacLellan et al., and Herrmann et al. teaches a system that covers substantially all limitations of the parent claim.

The combination of Carrender et al., Tiernay et al., Reis et al., MacLellan et al., and Herrmann et al. does not teach that the wake-up signal further includes group or individual identification information of the passive slave node or the active slave node; the passive slave node or the active slave node is configured to switch from the sleep state to an identification information detection state upon reception of the wake-up signal; the active slave node or the passive slave node, in the identification information detection state, is configured to switch to a control data reception state for receiving control data when the wake-up signal includes identification information identifying the active slave node or passive slave node, respectively, and the active slave node or passive slave node, in the identification information detection state, is configured to switch to the sleep state if the wake-up signal does not include said identification information identifying the active slave node or passive slave node, respectively.

Reis et al. teaches a central transmitter transmitting a signal that includes group (*e.g. all tag addresses of tags in group*) or individual (*e.g. tag address of tag in group*) identification information of slave nodes (*e.g. tags in group*) (*col. 5 lines 5-7*); each slave node is configured to switch from a sleep state to an identification information detection state (*i.e. address detection state*) upon reception of the signal (*col. 5 lines 7-10*); each slave node, in the identification information detection state, is configured to switch to a control data reception state for receiving control data when the signal includes identification information identifying the slave node (*col. 5 lines 11-13*), respectively, and the slave node, in the identification information detection state, is configured to

switch to the sleep state if the signal does not include said identification information identifying the slave node (*col. 5 lines 10-11*)

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system of the combination of Carrender et al., Tiernay et al., Reis et al., MacLellan et al., and Herrmann et al. to include the wake-up signal further includes group or individual identification information of the passive slave node or the active slave node; the passive slave node or the active slave node being configured to switch from the sleep state to an identification information detection state upon reception of the wake-up signal; the active slave node or the passive slave node, in the identification information detection state, being configured to switch to a control data reception state for receiving control data when the wake-up signal includes identification information identifying the active slave node or passive slave node, respectively, and the active slave node or passive slave node, in the identification information detection state, being configured to switch to the sleep state if the wake-up signal does not include said identification information identifying the active slave node or passive slave node as suggested by Reis et al. because it allows the master node to wake-up the active slave node and the passive slave node from a power conserving sleep-state for data communications and allows the active slave node and the passive slave node to switch to sleep mode to conserve power if not identified by address information for data communications with the master node.

- In reference to claim 36

The combination of Carrender et al., Tiernay et al., Reis et al., MacLellan et al., and Herrmann et al. teaches a system that covers substantially all limitations of the parent claim. As recited in the rejection of parent claim 35, the combination of Carrender et al., Tiernay et al., Reis et al., MacLellan et al., and Herrmann et al. teach that the identification information includes an identifier (*e.g. tag address*) of the passive slave node or the active slave node (*Reis et al. col. 5 lines 5-7*).

- In reference to claim 37

The combination of Carrender et al., Tiernay et al., Reis et al., MacLellan et al., and Herrmann et al. teaches a system that covers substantially all limitations of the parent claim. As recited in the rejection of parent claim 35, the combination of Carrender et al., Tiernay et al., Reis et al., MacLellan et al., and Herrmann et al. teach the identification information (*e.g. tag addresses*) identifies a group of passive slave nodes or a group of active slave nodes (*Reis et al. col. 5 lines 5-10*).

- In reference to claim 38

The combination of Carrender et al., Tiernay et al., Reis et al., MacLellan et al., and Herrmann et al. teaches a system that covers substantially all limitations of the parent claim. As recited in the rejection of parent claim 35, the combination of Carrender et al., Tiernay et al., Reis et al., MacLellan et al., and Herrmann et al. teach the identification information (*e.g. tag addresses*) identifies all passive slave nodes or all active slave nodes (*Reis et al. col. 5 lines 5-10*).

- In reference to claim 39

The combination of Carrender et al., Tiernay et al., Reis et al., MacLellan et al., Herrmann et al. teaches a system that covers substantially all limitations of the parent claim. Reis et al. further teaches that power consumption is smaller in the sleep state than in the identification information detection state (*col. 5 lines 5-11*) and is smaller in the identification information detection state than in the data control reception state (*col. 5 lines 5-11*).

- In reference to claim 41

The combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. teaches a system that covers substantially all limitations of the parent claim.

The combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. does not teach that at least one of the first or second master nodes includes a bridge providing a wireless or wired communication link to at least one other master node.

In Figure 2, Herrmann et al. teaches that a master node (*i.e. cluster head; 0025-0026*) includes a bridge providing a wireless communication link to at least one other master node (*i.e. cluster head; 0026*).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the system of the combination of Carrender et al., Tiernay et al., Reis et al., and MacLellan et al. to include at least one of the first or second master nodes includes a bridge providing a wireless or wired communication link to at least the

other master node as suggested by Herrmann et al. because it allows communication between master nodes in order to extend a communication range of the network.

***Response to Arguments***

Applicant's arguments with respect to independent claim 27 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN ROBERTS whose telephone number is (571)272-3095. The examiner can normally be reached on M-F 10:00-7:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DANIEL RYMAN can be reached on (571) 272-3152. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BSR
10/07/2010

/Daniel J. Ryman/
Supervisory Patent Examiner, Art Unit 2466